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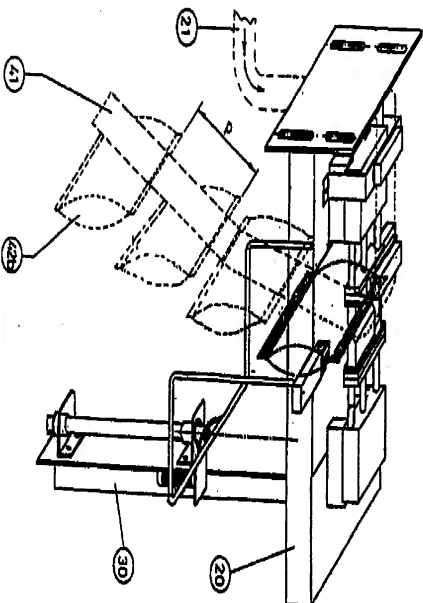
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(54) Title: APPARATUS FOR SECURING FLEXIBLE PACKAGES TO A DISPLAY STRIP

(57) Abstract

It is a system in which a desired number of flexible packages can be attached to the display strip successively by means of the detachable strip successively by means of the detachable strip. Stripping process: the package of which process is completed with the packing machine is held by the second station where it is sealed to the strip by means of small jaws under heat and pressure.



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APPARATUS FOR SECURING FLEXIBLE PACKAGES TO A DISPLAY STRIP

## 2- BACKGROUND OF THE INVENTION

### 2.a- The Title Of The Invention :

The fixing of flexible packages made by Vertical or horizontal form fill and seal packaging machines with a strip after being packed on a second station in the same machine, by the help of small jaws, using the method of with heat and pressure in a way that they could easily be removed from the strip; shortly names as THE METHOD AND APPARATUS FOR THE AUTOMATED ATTACHMENT OF DETACHABLY SECURING FLEXIBLE PACKAGES TO A DISPLAY STRIP, FROM WHICH THEY COULD EASILY BE TAKEN WITHOUT ANY DAMAGE, IS PERFORMED AT THE SECOND STATION OF THE TYPE VERTICALLY OR HORIZANTALLY FORM FILL SEAL PACKAGING MACHINE.

### 2.b- Field Of The Invention :

The invention involves the areas: outlets like supermarkets, markets, shops and nutshops, where packages of appetizers like biscuits, nuts, seeds, chips (potato, corn, lentils, fabicated), extruded snacks and nuts are sold, utilizing the method of the invention for displaying their products. One of these methods is hanging packages strips arranged in a line. This method is preferred by both the consumers who can easily make their choice.

However, the present condition of the technique is a terrible expense for the producer and a painstaking procedure for the consumer. The packets should be safely arranged so that they will not fall down, they should only be taken by pulling downwards and neither the package nor the strip should be damaged in the meantime and nor the packages on the strip should be dropped.

### The Present Condition Of The Technique :

The packages are usually produced in vertical or horizontal form fill and seal packing machines. The bottom of the materials like polyethylene, polypropylene, aluminium foil and bi-oriented polypropylene (bopp) (or several of them) are laminated by the help of pneumatic, hydraulic or mechanical pressure properly selected for the material; the packages are filled and the tops are closed by sealing and cut and taken away from the machine by a conveyor which stands just below the packing machine. The packages taken away from the packing machine by a conveyor are unloaded into a second station where the packages are lined up on perforated cardboard strips by at least three manual workers. (Fig.5 Pos.M1, M2)

In a middle-sized factory with 15-25 packing machines, the number of workers needed is 15-75 in one shift and 135-225 in three shifts. Besides waste of labour and the difficulties it brings to the worker, the increasing expense is unaffordable for both the consumer and the manufacturer.

For this reason, the experts in many countries in the world have been working on this subject for years.

Some examples patented in the USA and our opinions about them and the advantages of our invention when compared to others are as follows.

Palmer U.S. Pat. No. 4,422,552 et al and Palmer U.S. Pat.No.4,476,619 disclose methods and apparatus for folding the end seal or flange of a bag into the slot of a display card. The steps of folding and tucking the end seals of numerous packages into a slotted display card are often performed manually and consume considerable time and expense. The prior art, however, includes alternative methods of attaching flexible packages to a display card. For example, Runner U.S. Pat.No.2,272,623 discloses a display card with packages removably attached thereto by adhesive. In Farfley U.S.Pat.No.4,003,782 manufactured bags are applied to two lines of pressure sensitive adhesive and then stored in a carton or the like. It is also known to attach empty packages to a display or mounting support base and then fill and seal the packages.

See Hanmon U.S.Pat.No.3,351,162. Several problems arise with the aforementioned methods of securing packages to a display strip. One problem that often occurs when the

packages are adhesively attached to the display strip is that the packages cannot easily be removed from the strip without damaging the sealed condition of the packages.

In Patrea's patent with no. 3,864,895 in the USA only the packages made in vertical packing machine are glued onto the strip on a second station by a vacuumed arms on the conveyor. Finally in Recot, Inc.'s patent with no. 5,433,060 in the USA, the system of sealing the packages on the strips under pressure and heat. Since in Recot's patent the packages are not damaged in the strip, in some cases where the packages, the strip and the hanger might be damaged and also the packages fall down, the packages are not damaged in this invention; in the system which is based on this applied method has some differences and superlatives which are exploited in details below compared to Recot, Inc.'s patent in the USA with no. 5,433,060.

a) As mentioned in Recot's claim no.1, the sealing of the packages on the strip under pressure and heat is not a recent invention, because announcements for promotion have been made ever since by sealing strips onto packages. A similar application can be seen in case of potato and fruit bags.

b) It's known by those who know the subject well that the loosening of the joining parts and different wearing might cause serious problems because there is a mechanical damage on every package made in jaws which are constantly warming and cooling and the additional parts are not tight. This will bring some disadvantages as below.

c) As mentioned in Recot's patent with no. 5,433,060, the sealing of the strip or the package gets very strong and the system of hangings might be damaged or when the sealing is too loose the packages might be dropped by the wind or another effect.

d) In feeding the strip, as Recot suggests, a step motor or a pneumatic system should be used; in other words there is a system that has a function of positive pulling by means of the strip is prepared with a system that has a function of positive pulling by means of belkewed pitch piston assembled on a small jaw group. Therefore there is no need for the step motor and the necessary micro processor commanding it an electronic circuit anymore. (like PLC)

e) As seen in Recot's patent in question FIG.5 Pos N1 and N2, there is a risk of ripping the bag opened as a result of pulling downwards. To prevent this, the strip should be held by the bottom side of the packages and be lifted up, but it is not usually practised, also a free from the pawl. However, in our invention, as shown in FIG.5 Pos N1 and N2, the packages are adversely twisted on the strip, they are not sealed on the adhesives but pulled downwards. As a result the procedure which the consumer follows is not a kind of ripping but releasing the packet from the strip.

There for the strip and the system of hangings.

f) The strip should be cut into certain lengths so as to be placed successively in a row.

g) In Recot's patent, since there are not any measures taken for this operation, the product should be counted by a worker before cutting. In this invention, however, the required number of packages are automatically cut after being attached on the strip and then the workers who places the strips in cases and sends them to the store for the purpose of being delivered to outlets.

## 2.c. The Technical Problems Which The Invention Aims To Solve And Secondary Goals

With this invention, the stripping process that is mentioned at the item 2-e is carried out automatically and brings a solution for the following problems:

- A great number of workers work on the packing area which is quite narrow and uncomfortable.
- The workers who work at the machines repeat a monotonous and boring action thousands of times.
- The cardboard which is still consumed as strips is first prepared, obtained and then produced.

- d) During the process from production to delivery (unloading-storing- transfer- unloading- storing- loading etc.) packages slip out of cardboard strips (FIG. 5 Pos. M1, M2) at the point where strips are locked by hand due to external factors such as vibration and bumps and they fall.
- 5 e) At the point where it is presented to the consumer, the packages become loose and fall due to external factors such as wind, bumps, knocks.
- f) While the packages produced in accordance with the method by Recot patent are shaken or pulled out of the strips there is a high risk of damage to the strips and the POS. a0, a1, a2, and a3.
- 10 g) In Recot Patent (which recent developed patent at this subject), since the strip produced gets continuously longer, the cutting process of packages containing desired number of pieces (like 10 each) is not automatic.
- h) Stripping process can be started by using signals on the original circuit of the bagmaker, in a way that there is no need for a complicated system such as with step motor or micro processor (or with PLC). Hence, the cost is low and there is no complexity.
- 15



## 2.e. Description of Background Art.

This invention related generally to system for attaching (attaching) bags to a carrier strip, especially to a system for attaching selectively securing flexible bags to a display carrier strip and simultaneously affixing at the second station.

- The packing machine producing the package is illustrated in the figure 1, but the principal operating system (there are machines that have pneumatic, mechanic, hydraulic, rotary, electro-pneumatic, electro-mechanic or electro-hydraulic operating systems) is already known by the science of packing technology; thus, the details will not be defined again when explaining this invention.

- Sealing of the upper and lower ends of the packages in the horizontal and vertical type form filling and sealing packing machines is carried out and cut by the same jaw group (17). Sealing of the back parts is carried out by back jaws (14) in the vertical types and in the horizontal types the same process is performed while the package is going through 2-3 jaw groups with rotary disks, thus the packet one end of which is sealed and the other is open like a tube (16) is ready before the product is put in.

- How to produce a small number of packages and meanwhile the application of the packing machines (10) have stripping reels (18-b) near the mechanism (11-a) in which normal package reel (11-b) is located.

- While packing material starting from the package bobbin is going through various (directing) rolls (14d) off center and information such as date of code is checked and printed automatically (12), afterwards the packing material goes through a special tube former and then while this material being wrapped around a pipe in accordance with the sealing method is being pulled by the jaw, it is applied to the jaws as much as the length of the package by means of frictional and vacuumed belts in the machines of some certain types.

a) Stripping bobbin is placed in the spare bobbin (18a) pin of the machine. Here, a strip having a counter weight part (15) is used in order to prevent the bobbin from turnover because of the speed increase that occurs during operation.

b) On the first main piston (23) are connected the driving piston (22), stroke (pitch) piston (23) and the guide chute (24). The knife cutting the strip at certain length (by the signal it perceives) (29) and the piston to which it is connected are also connected to this part.

c) On the second main and vertical part (30) (which can be installed two different way see fig. 1) - shown in Figure 4-are connected the pneumatic grippers (33) that hold the package of armed bars (32) to which those pneumatic gripper are connected, and the pneumatic piston (31) which causes the armed bar system to move up and down with the signal it perceives and the sensor that enables the bar system to complete the cycle by making use of the position of the pneumatic piston while it is going through a certain point, and the plate (35) enabling the package to pass out.

d) The packages (16-b) weighed, filled and sealed at the top, bottom and back by the packing machine is held by the two reciprocal pneumatic grippers (33) at the point where the subject matter of the patent, and is rapidly carried to the second station (this is the point where the packages are sealed to the stripe). While it is being carried Sensor (34) produces a signal by perceiving plate (35) which is connected to the arm (32) and by which the package comes down, and sends this signal to the pneumatic system which moves the sealing jaws (27). The valves receiving the signals open the sealing jaws connected to the pistons are (26) and so the pistons are put into motion. At the end of this process, the package is ready to be attached to the stripe. (The figure on Page 3).

- When the jaws (27) attach the package to the stripe, finger shaped clamps (33) are opened and they rapidly go up to the first station with their arms open in order to hold a new package.

- When they reach the first station the arms are still open. The jaws at the first station perform the sealing process, and during the cutting process the pneumatic clamps are closedly the signal coming from this process and hold the package. While the sealing jaws are opening the system carries the package to the second station. During the time the



package is being carried down, the sensor sees the perceiving part and gets the sealing jaw to the package. The cycle goes on.

- While the jaw is closing, the pitch piston (22) is open and it allows the stripe to pass below. However, the pitch piston (23) is closed. Nevertheless, the jaw (27) to which the piston is connected has pulled with it as much stripe (21) as the distance way it covers while coming forward. This length is equal to the space (p) between the packages on the stripe. ( It is called "pitch" )

- While coming back after sealing, the braking piston(22) is closed and the pitch (step) piston (23) is open, so when the pitch piston comes forward the stripe is pulled as much as a step (p) and its position is fixed so that it can not move back-thus the step remains unchanged. Meanwhile, the packages (42-b) on the prepared stripe stretch the stripe and keep it stretched by gravity.

- The process continues as mentioned. During those processes the package (16) is filled with the product weighed on the electronic scale located on the packing machine or it can be filled (fed) by hand.

The packages (42-b) which sealed (bottom, top and back) at the first station of the packing machine are automatically attached to the stripe (21) at the second station by armed clasps (33) and after being cut at certain lengths, they are poured into the conveyor belt beneath the packing machine and with the help of the conveyor (40) the packages are taken out to be put into cases. Packages in cases are sent for shipping to be supplied to the market.

## 3. CLAIMS

- 1- Stripping the packages, produced by vertical or horizontal type fill and seal packing machines having on a carrier display strip at a second station of the same machine using the sealing method of applying heat pressure in order to attach them so that the packages themselves, the display strip and the system of hangings will not get damaged.
- 2- Apparatus as defined in Claim 1, the sealing method of applying heat and pressure to the package as shown in the figure on FIG.5 Pos. 01-02, which is the most characteristic of our invention - by means of this invention packages produced by vertical or horizontally type form fill and seal packing machines that have the ability to be adhered more safely, and more easily detached than those produced by other available systems and the packages themselves, the strip or the system of hangings are not damaged.
- 3- Apparatus as defined in Claim 1 the method of feeding the strip from opposite the small side seal jaw located on the opposite side of the vertical jaw (or back sealing disk can do so) to the second station of the strip sealing machine, (the strip is sealed in the condition mentioned in item 2 said type machines,) at the second station in order to have
- 4- An apparatus according to claim 2, where in one of two strip sealing jaws, includes a guiding chute with bar and the carrier strip passes through the chute on the strip sealing jaw to a location adjacent an end of a package.
- 5- Apparatus as defined in Claim 1, the matter that the strip is able to be pulled by means of natural motion of the jaw with a direct positive effect from the system at the second station to which small strip sealing jaws and pitch piston are connected each other. (The type of the braking piston and pitch piston/mechanic, vacuum, diaphragm, disk driver doesn't change the essence of the system.)
- 6- Apparatus as defined in Claim 1, the matter that the machine can perceive signals from the normal electric system so the system can be operated without needing an extra control system (PLC or microprocessor).
- 7- An apparatus according to Claim 1, where in at least one pair of strip seal jaw is of a plurality of mating seal elements (strip) at station-III.
- 8- An apparatus according to Claim 2, wherein said seal-forming means includes a pair of sealing jaws for forming the top and bottom seals of adjacent packages.
- 9- An apparatus according to Claim 4, where in one of the strip sealing jaws of said seal-forming means includes a guiding chute with bar therethrough for feeding the carrier strip therethrough and against a package (to front side of package.)
- 10- Apparatus as defined in Claim 1, the process in which the strips, are cut at certain lengths (when a certain number of packages are placed) after the packages are attached to the strips in order to be eased.
- 11- The method by which the strip bobbin is installed at the side where the other main bobbin is located.
- 12- The method by which the stripped packages are carried to the back side of the machine by a mobile conveyor belt passing beneath the machine, the result is becomes easier to (However, whether conveyor belt (46) used for the purpose of transportation takes away the packages/strips from the front, back, left or right sides of the machine doesn't effect the essence of this patent.)
- 13- The method of attaching the package by means of small jaws located at the second station which is situated at the opposite side of the sealing performed by the vertical back jaw (the back sealing disks in the horizontal type machines) for the method of attaching at FIG. 5 Pos. 01 and 02.

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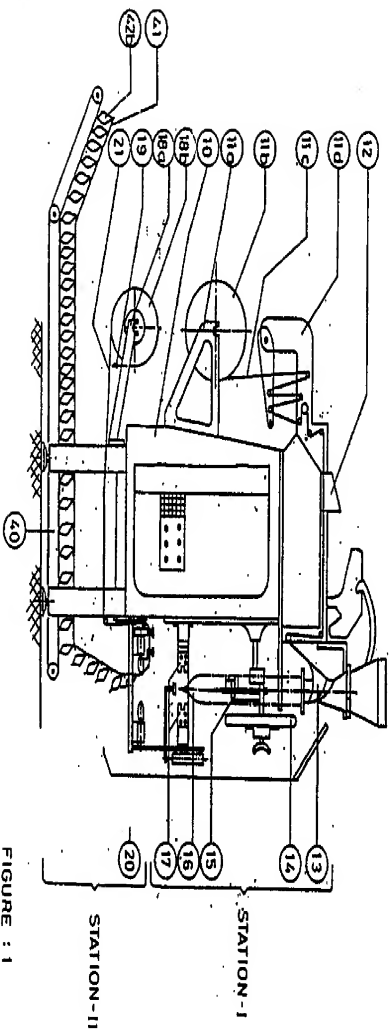
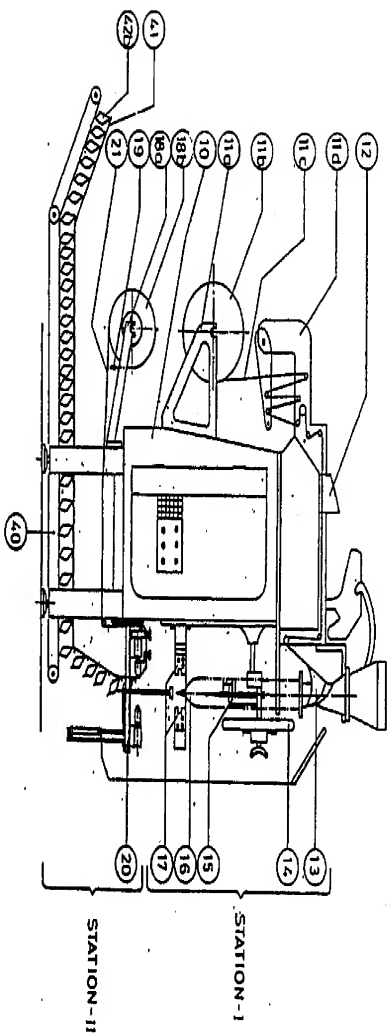


FIGURE : 1

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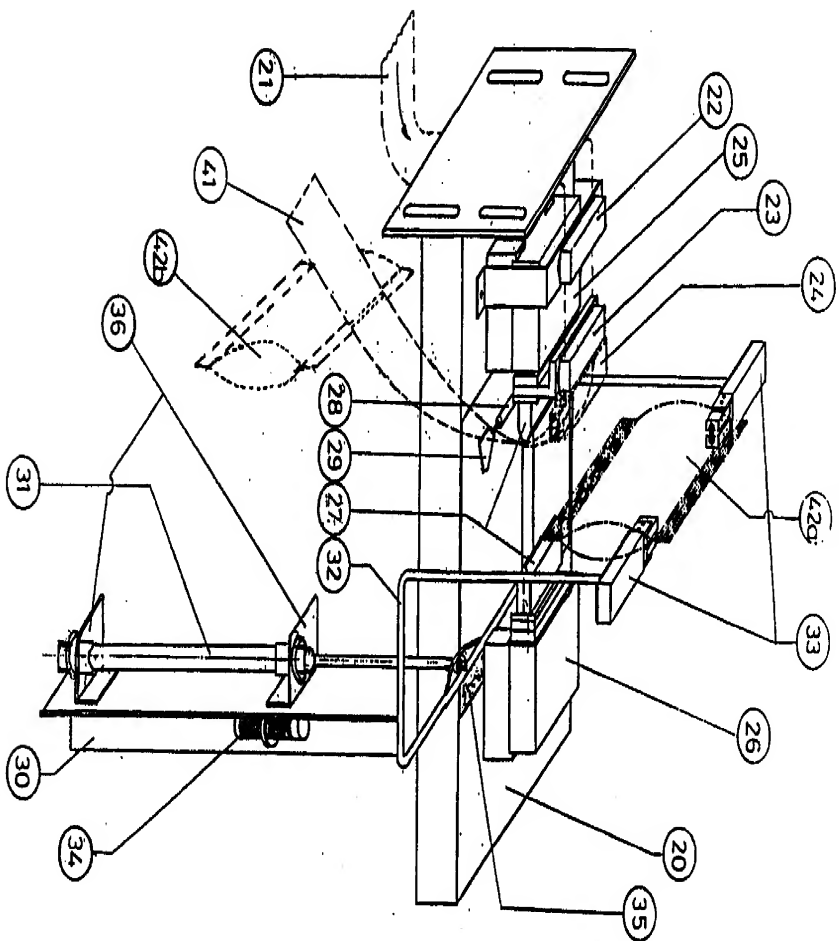


FIGURE : 2

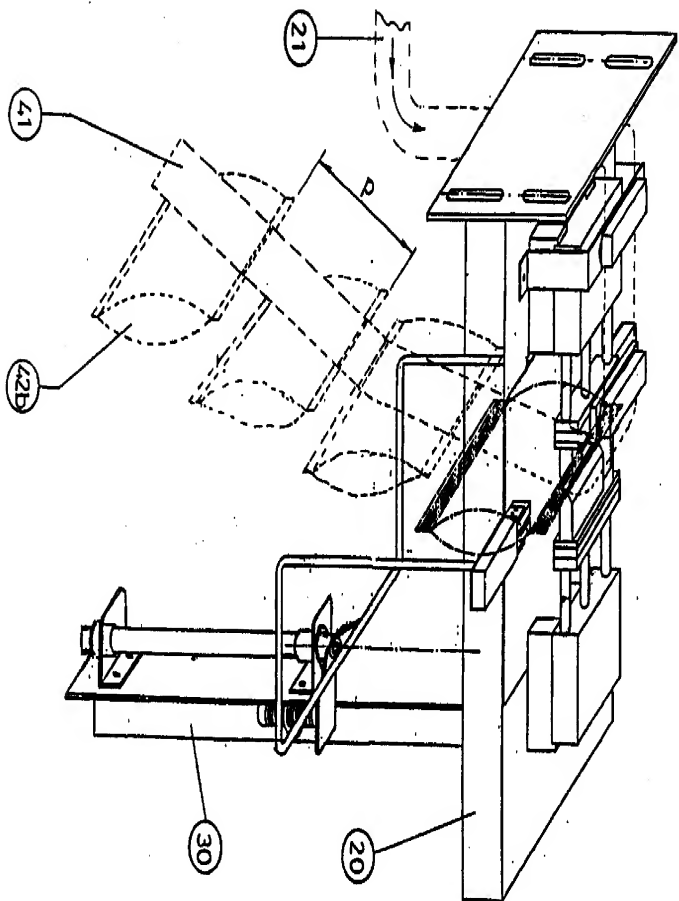


FIGURE : 3

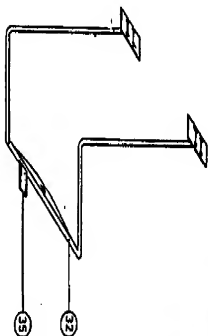
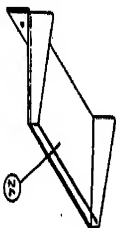
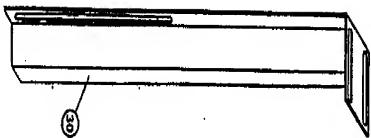
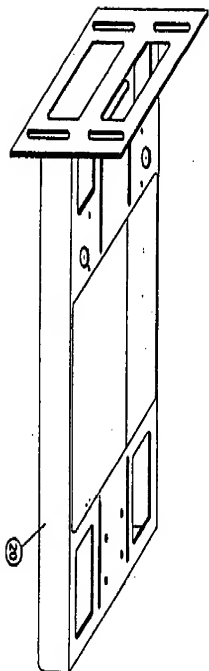


FIGURE : 4

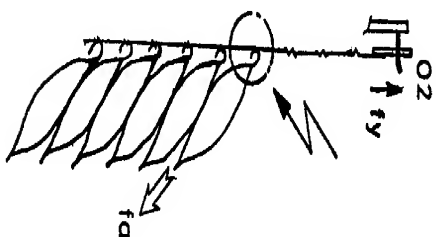
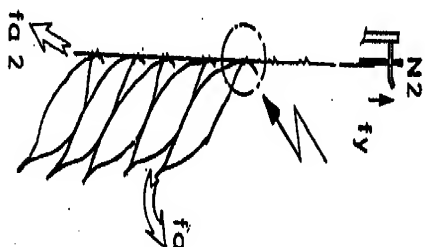
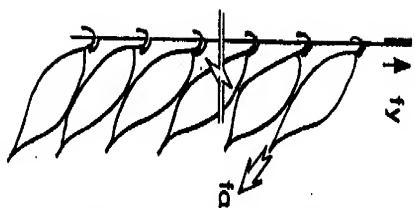
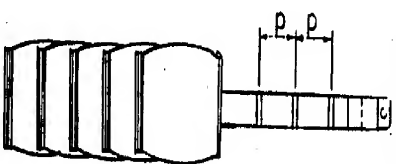
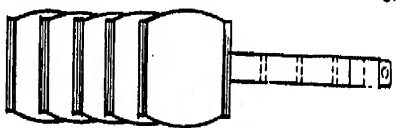
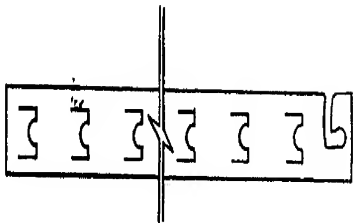


FIGURE : 5

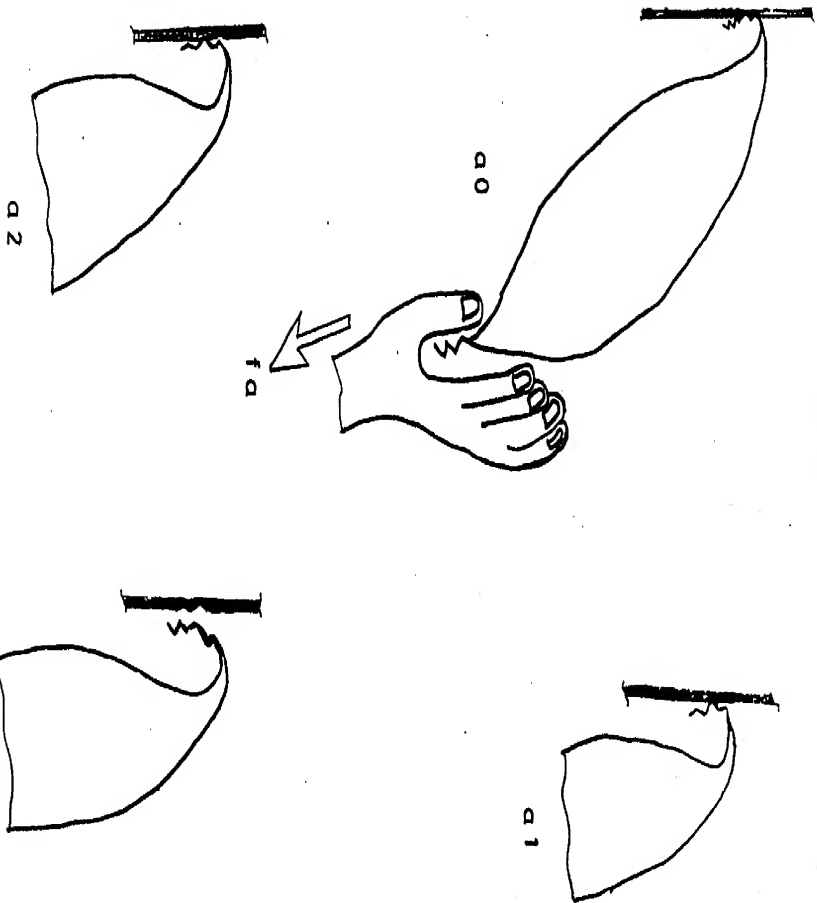


FIGURE : 6



## INTERNATIONAL SEARCH REPORT

International application No.  
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## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: B 65 B 15/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELD(S) SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: B 65 B 15/00; B 65 D 73/00

Documentation searched other than minimum documentation in the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (names of data base and, where practicable, search terms used)  
WPI, EPDOC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3 864 895 A (PETREA) 11 February 1975 (11.02.75), especially column 4, lines 47-68 (cited in the application).	1-13
A	US 5 433 060 A (GUR et al.) 18 July 1995 (18.07.95), (cited in the application).	1-13

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Date of the actual completion of the international search

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### Information on patent family members

PCI/TR 97/00011

US A	5435060	11-02-75	18-07-95
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US A	3864895	11-02-75
US A	5433060	18-07-95

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## EUROPEAN PATENT SPECIFICATION

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## (54) AUTOMATED METHOD AND APPARATUS FOR DETACHABLY SECURING FLEXIBLE PACKAGES TO A DISPLAY STRIP

AUTOMATISIERTES VERFAHREN UND VORRICHTUNG ZUM LOSBAR VERBINDEN VON FLEXIBLEN VERPACKUNGEN AUF EINEM ANZEIGESTREIFEN  
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## Description

## BACKGROUND OF THE INVENTION

## Field of the Invention

[00001] The present invention relates generally to systems for attaching packages to a carrier strip and, more particularly, to a method and apparatus for detachably securing flexible packages to a display carrier strip and simultaneously forming a sealed end of each package.

## Description of Background Art

[00002] It is known in the art to form flexible packages of various products, e.g., snack food products, and attach the packages to a carrier strip which may be displayed in a grocery store or the like. The customer can remove a package from the carrier without damaging the package, i.e., without adversely affecting the sealed condition of the package. One of the primary attributes of such display strip systems is their suitability for use in a store where the customer is able to independently select the packages to be purchased. Such systems typically employ display racks, which racks may not fit in particular establishments due to space limitations or may not be justified in view of limited sales volume. The display strip and attached packages require little space and may be positioned on a counter or other suitable support.

[00003] U.S. Patent No. 3,864,895 discloses a bag forming, filling, and sealing machine for producing small packages of a product adhesively secured to a backing sheet.

[00004] U.S. Patent No. 4,422,552 to Palmer et al. and U.S. Patent No. 4,516,815 to Palmer et al. disclose a method and apparatus for filling the end and flange of a bag into the slot of a display card. The steps of filling and tucking the end and flange of numerous packages into a slot of a display card are often performed manually and consume considerable time and expense. The prior art, however, includes alternative methods of attaching flexible packages to a display card.

[00005] For example, U.S. Patent No. 2,272,623 to Farmer discloses a display card with packages removably attached thereto by adhesive. In U.S. Patent No. 4,008,762 to Farrelly, manufactured bags are applied to two lines of pressure sensitive adhesive and then stored in a container for use by the customer. The display card is used to display or mount support bases, then fill and seal the packages. See U.S. Patent No. 3,331,182 to Harmon. Several problems arise with the aforementioned methods of securing packages to a display strip. One problem that often occurs when the packages are adhesively attached to the display strip is that the packages cannot easily be removed from the strip without damaging the sealed condition of the packages. Additional problems arose in attempts to automate the attachment of the carrier strip to the flexible

packages due to the limited space available below the sealing jaws of a conventional bagmaking apparatus. In other words, there was little or no room below the seal jaws to accommodate automatic attachment equipment.

[00006] It is apparent that there is a need in the art for a method and apparatus for removably securing flexible packages to a display strip which also free of the problems present in prior art systems.

## SUMMARY OF THE INVENTION

[00007] The present invention provides a method and apparatus for detachably securing flexible packages to a display carrier strip while simultaneously sealing an end of each package. In its preferred form, the present invention includes a novel sealing jaw assembly which permits the display carrier strip to be fed therethrough into close proximity with the package preform. The sealing jaws place a transverse seal in the package preform which forms the top seal of a filled package extending below the jaws, and the bottom seal of an empty package above the jaws. The top seal of the top seal of each package is detachably secured to the carrier strip. The display strip simultaneously with the forming of the transverse seal. The continuous display strip and attached packages then may be transported by a suitable conveyor device to a packaging area or the like and prepared for shipment.

## BRIEF DESCRIPTION OF THE DRAWINGS

[00008] Additional features and advantages of the present invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a somewhat schematic view of an automated assembly apparatus for detachably securing flexible packages to a display strip;  
FIG. 2A is a perspective view of a sealing jaw according to the present invention;  
FIG. 2B is an end elevation view of the sealing jaw shown in FIG. 2A looking in the direction of arrows b-b in FIG. 2A;  
FIG. 2C is a sectional view of the sealing jaw shown in FIG. 2A looking in the direction of arrows c-c in FIG. 2A;  
FIG. 3A is an enlarged view of the encircled portion in FIG. 1;  
FIG. 3B is a front elevational view of the portion shown in FIG. 3 looking in the direction of arrows a in FIG. 3;  
FIG. 4A is a front elevational view of the finished display strip and attached packages;  
FIG. 4B is a side elevational view of the display strip and attached packages shown in FIG. 3A; and  
FIG. 4C is a front elevational view of the display

strip and attached packages shown in FIG. 3A with some of the packages removed.

# DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0009] Referring to FIG. 1, an automated apparatus for detachably securing flexible packages to a display strip is indicated generally by the reference numeral 10. A bagmaking apparatus, e.g., a vertical form, fill, and seal apparatus (VFPS), is shown schematically at 12. Bagging and sealing of the packages is accomplished by the bagmaking apparatus and will not be described in detail in the present application.

[0010] Bagmaking apparatus 12 forms packaging material into package preforms which are advanced in consecutive fashion through the apparatus 12. In particular, a preform is transversely sealed by sealing jaws at a sealing station disposed below the filling side of the bagmaking apparatus. The seal constitutes the top edge of a filled package extending below the sealing station and the bottom edge of a yet to be filled package extending above the sealing station. A lentic mechanism seals the preform at the transverse seal to separate the filled package from the yet to be filled package. The filled package is then moved to a station where the bottom edge is sealed at both ends and the upper package being empty and sealed at its lower end. After separating the packages by cutting the transverse seal on the preform, the empty package is advanced and filled to bring its top edge to the sealing station where it is sealed and separated from the next package, i.e., the package now extending above the sealing station.

[0011] The sealing station is indicated generally at 50 in FIG. 1, and includes sealing jaws 52, 53 for forming the aforementioned transverse seals. A lower sealing assembly for remotely attaching the seal to the carrier strip is indicated at 40 in FIG. 1. This assembly includes lower sealing blocks or bars 62, 63, as best seen in FIGS. 2A-2C. Lower sealing blocks or bars 62, 63 preferably are respectively secured to sealing jaws 52, 53. Sealing jaw 52 has a cut-out portion 56 which defines a slot 68 extending through the jaw for reasons that will be described below.

[0012] With attention directed to FIG. 1, a supply reel 14 of display carrier strip material has a strip web 18 extending therefrom toward bagmaking apparatus 12. A reel friction brake 16 controls the speed of rotating supply reel 14. The display carrier strip is preferably manufactured from a material that is flexible but yet stiff enough to maintain its shape. The carrier strip is shown in FIG. 1 as having a lentic portion 20. The display strip material is selected so that it does not melt and/or deform before the attachment of the packages to the strip, i.e., as the strip is fed through the sealing jaw which typically reaches 375°F. during operation. For example, the display carrier strip may be manufactured from suitable plastic materials, such as paper laminated to coextruded metallized polyethylene to 40 micron

polypropylene.

[0013] The carrier strip web 18 passes from supply reel 14 to a strip drive mechanism indicated generally at reference numeral 30 and enclosed in circle 1 in FIG. 1. The strip drive mechanism 30 advances carrier web 18 in a controlled manner relative advancement of the package preforms. The strip drive mechanism 30 can be any device which suitably advances the carrier strip web 18 through the sealing station 50, 60.

[0014] The circle portion 1 of FIG. 1 is enlarged in FIGS. 4A and 4B and shows a preferred embodiment of a strip drive mechanism 30 which includes a stepped shaft 32 having a shaft 34 which defines a step 36. The stepper wheel slot formed in sealing jaw 52 web 18 into an elongated slot formed in sealing jaw 52 as described in detail below. A back-up roller 38 is disposed next to stepper wheel 36 and the strip web 18 passes between the back-up roller 38 and the stepper wheel 36. The back-up roller 38 may be rotatably mounted on a bracket 40 as shown in FIG. 3B. The stepper motor can be precisely controlled to permit the carrier strip web to be properly positioned relative the package preforms advanced by the bagmaking apparatus. In addition, the strip drive mechanism 30 can be controlled by a stepper motor 39 which is automatically controlled, e.g., by a microprocessor. The stepper wheel preferably includes a rubber wheel having, e.g., a 2 inch diameter and a 3 inch width. The rubber wheel frictionally engages the strip material web 18 and cooperates with back-up roller 38 to advance the web.

[0015] Those skilled in the art will recognize, of course, that means for advancing the carrier strip web other than the above-described stepper motor may be used. For example, an air cylinder device which advances the strip web with air powered mechanical means may be used in lieu of the stepper motor.

[0016] With attention directed to FIGS. 2A-2C, sealing jaw 52 of sealing station 50 and sealing block 62 of lower sealing assembly 60 are shown therein in detail. Sealing jaw 52 includes an upper sealing portion 54 and a lower sealing portion 56 separated by a groove 58. The groove 58 extends a limited distance from adjacent the outer surface of sealing portions 54, 56 into the interior of sealing jaw 52. See FIG. 2C. Groove 58 preferably contains a lentic mechanism (not shown) which severs the package preform into a lower filled package and an upper empty package as described above. Specifically, upper sealing portion 54 forms the lower sealing portion 56 of the lower sealing jaw 52. The lower sealing portion 56 forms the upper transverse seal of the filled lower package. After the lentic mechanism separates the packages, the upper package, the bottom edge of which now has been sealed, may be filled and advanced downward, whereas further actuation of the sealing jaws 52, 53 seals the top of the same package. [0017] The present invention attaches the filled sealed

packages to the display strip 18 simultaneously with the forming of transverse seals as described above. Attached to the sealing jaws 52, 53 by any suitable means are, respectively, sealing blocks 62, 63 of lower sealing assembly 60. As seen in FIGS. 1 and 2C, the display strip 18 is provided with a transverse slot 55 into engagement with the packages. For this purpose, sealing jaw 52 is provided with an elongated slot 65 extending therethrough. A cut-out portion 66 of sealing jaw 52 cooperates with sealing block 62 to form a seal 68. In particular, sealing block 62 preferably is secured to sealing jaw 52 so as to cover cut-out portion 66. See FIG. 2B. Sealing block 62 also preferably has a width that is slightly greater than the width of cut-out portion 55 but less than the overall width of sealing jaw 52.

[000181] Lower sealing blocks 62, 63 have mating seal elements 64 disposed thereon as best seen in FIGS. 2A and 2B. The sealing elements 64 of each block 62, 63 are aligned so as to engage each other when the seal 68 is formed. 52 is provided with a transverse slot 55 into engagement with the packages. For this purpose, sealing jaw 52 is provided with an elongated slot 65 extending therethrough. A cut-out portion 66 of sealing jaw 52 cooperates with sealing block 62 to form a seal 68. In particular, sealing block 62 preferably is secured to sealing jaw 52 so as to cover cut-out portion 66. See FIG. 2B. Sealing block 62 also preferably has a width that is slightly greater than the width of cut-out portion 55 but less than the overall width of sealing jaw 52.

[000182] Lower sealing blocks 62, 63 have mating seal elements 64 disposed thereon as best seen in FIGS. 2A and 2B. The sealing elements 64 of each block 62, 63 are aligned so as to engage each other when the seal 68 is formed. 52 is provided with a transverse slot 55 into engagement with the packages. For this purpose, sealing jaw 52 is provided with an elongated slot 65 extending therethrough. A cut-out portion 66 of sealing jaw 52 cooperates with sealing block 62 to form a seal 68. In particular, sealing block 62 preferably is secured to sealing jaw 52 so as to cover cut-out portion 66. See FIG. 2B. Sealing block 62 also preferably has a width that is slightly greater than the width of cut-out portion 55 but less than the overall width of sealing jaw 52.

[000183] Lower sealing blocks 62, 63 have mating seal elements 64 disposed thereon as best seen in FIGS. 2A and 2B. The sealing elements 64 of each block 62, 63 are aligned so as to engage each other when the seal 68 is formed. 52 is provided with a transverse slot 55 into engagement with the packages. For this purpose, sealing jaw 52 is provided with an elongated slot 65 extending therethrough. A cut-out portion 66 of sealing jaw 52 cooperates with sealing block 62 to form a seal 68. In particular, sealing block 62 preferably is secured to sealing jaw 52 so as to cover cut-out portion 66. See FIG. 2B. Sealing block 62 also preferably has a width that is slightly greater than the width of cut-out portion 55 but less than the overall width of sealing jaw 52.

ages are prepared for distribution. The flexibility of the display carrier strip permits the same to be easily packed with the packages attached thereto for easy storage and/or transportation.

[000221] FIGS. 4A-4C show a display strip produced according to the present invention and having a plurality of packages secured thereto in removable fashion. The display carrier strip 100 includes an adhesive hanger member 110 which is adapted to be attached to the entire length of a suitable support surface. The support surface may be, for example, a wall, a display rack, or a support or hanger means may be used. The strip 100 has packages 120 removably attached thereto by heat seal connections 130 formed by the strip seal bars or blocks 62, 63 as described above. FIGS. 4A and 4B show a display carrier strip 100 fully covered with packages 120. FIG. 4C shows the product display strip of FIGS. 4A and 4B with several packages removed. The releasable heat seal connections 130, which permit removal of the packages 120 without damaging the sealed condition, are visible on the portion of the display carrier strip 100 from which packages have been removed.

[000231] It is apparent that the method and apparatus of the present invention permit the removable attachment of filled, sealed flexible packages to a display carrier strip without the problems present in prior art systems. The attachment of the packages to the display carrier strip is carried out using the existing motion of the sealing jaws which form the top and bottom edge seals of each package. A precisely controlled strip drive mechanism cooperates with the sealing jaws to eliminate prior art problems in package control and positioning. Moreover, the attachment mechanism for positioning the packages to the carrier strip is greatly simplified over prior art systems. Consequently, the present invention substantially reduces manufacturing cost compared with conventional package attachment systems.

[000241] The features and advantages of the present invention will readily occur to those skilled in the art, as will many modifications and alterations in the preferred embodiments of the invention described herein, all of which may be achieved without departing from the spirit and the scope of the invention as defined by the appended claims.

#### Claims

1. An apparatus for manufacturing a plurality of sealed packages (70) which are detachably secured to a display carrier strip (18), the apparatus comprising:
  - a bagmaking device (12) for forming a package preform; the preform configured to receive product;
  - a sealing station (50) disposed adjacent said bagmaking device (12), the sealing station (50) including sealing jaws (52, 53) for forming a transverse seal across the preform to form a

top seal of a filled package extending below the sealing station (50) and a bottom seal of a package to be filled extending above the sealing station (50);

the apparatus characterized in that it further comprises:  
a strip drive device (30) for feeding a continuous transverse sealing strip (15) to a location adjacent to the sealing station (50), and at least one strip seal bar (52) for detachably securing an end of each package to the carrier display strip (15) simultaneously with the sealing of an end of the package by the sealing jaws (52, 53);  
whereby filled sealed packages (70) are secured to the carrier display strip (15) and can be removed therefrom without damaging the sealed condition of the packages.

2. An apparatus according to claim 1, wherein one of the sealing jaws (52) indicates a slot extending through the carrier display strip (15) passes through the slot to a location adjacent to the package end to be secured to the carrier display strip (15).
3. An apparatus according to claim 2, wherein the slot is defined between said at least one strip seal bar (52) and a cut-out portion (55) of said one of said sealing jaws (52).

4. An apparatus according to any preceding claim, wherein a first strip seal bar (52) is secured to a first sealing jaw (52) and a second strip seal bar is secured to a second sealing jaw (53), and wherein activation of said first and second strip seal bars (52, 53) to form the transverse package seal secures the first and second seal bars to removably secure a package to the display carrier strip (15).

5. An apparatus according to any preceding claim, wherein the strip drive device (30) includes a stepper motor (32) and a stepper wheel (36), and the stepper motor (32) rotates the stepper wheel (36) to controllably advance the display carrier strip (15) toward the sealing station (50).

6. An apparatus according to any preceding claim, further comprising:

means for separating adjacent preforms along the transverse seal to form the bottom and top seals of packages extending, respectively, above and below the sealing station.

7. A method of manufacturing a plurality of filled, sealed packages which are removably secured to a continuous carrier strip (15), the method comprising steps of:

forming a series of package preforms, each of which is configured to receive product from a product supply source; and

for each preform, forming at a sealing station (50) a transverse seal across the preform to form a top seal of a filled package extending below the sealing station (50) and a bottom seal of a package to be filled extending above the sealing station (50);

the method characterized by further comprising the steps of:  
feeding said carrier strip of a sealable material;  
positioning said continuous sealable carrier strip (15) adjacent the package preforms; and simultaneously with forming the transverse seal, detachably securing the top of the filled package to the carrier strip (15) by moving the top of the filled package against the display carrier strip (15) and removably joining the top seal of the filled package to the carrier strip (15).

8. A method according to claim 7, wherein sealing of the preforms at the sealing station (50) is performed by sealing jaws (52, 53) which (50) detachably secure an end of the filled package to the carrier strip (15).

9. A method according to claim 8, wherein one sealing jaw (52) includes an opening through which the carrier strip (15) can be passed, the method further comprising passing the carrier strip (15) into close proximity with the package preform and detachably securing the package preform to the carrier strip by the sealing jaws (52, 53).

10. A method according to claim 9, wherein the display carrier strip (15) is advanced through the opening in the one sealing jaw (52) and toward the sealing station (50), by rotating a stepper wheel (36) of a strip drive device (30) by means of a stepper motor (32) of the strip drive device (30).

#### Patentansprüche

1. Vorrichtung zum Herstellen einer Anzahl von verpackten Packungen (70), die an einem Trägerstreifen (15) abnehmbar befestigt sind, wobei die Vorrichtung aufweist:

eine Beförderungsanordnung (30) zur Auskantung einer Packungspreform, wobei die Vorform zur Aufnahme eines Produktes geeignet ist;

eine Versiegelungsstation (50), die neben der Beförderungsanordnung (30) angeordnet ist, wobei die Versiegelungsstation (50) Versie-

- gekungsbecken (52, 53) zur Ausbildung einer Querverstellung über die Vorforn aufweist, um eine obere Verriegelung einer geöffneten Packung, die sich unterhalb der Verriegelungsstation (50) erstreckt, und eine untere Verriegelung einer zu tolerierten Packung, die sich erstreckt zu bilden; Verriegelungsstation (50) dadurch gekennzeichnet, daß die Vorrichtung ferner aufweist:
2. Vorrichtung nach Anspruch 1, bei welcher der Verriegelungsbecken (52) einen sich durch denselben erstreckenden Schlitz enthält und der Trägestreifen (18) durch den Schlitz nahe dem am Trägestreifen (18) zu befestigenden Pakkungsrand verläuft.
  3. Vorrichtung nach Anspruch 2, bei welcher der Schlitz zwischen dem Trägestreifen (18) und dem Trägestreifen (52) des einen Verriegelungsbeckens (52) gebildet ist.
  4. Vorrichtung nach einem der vorangehenden Ansprüche, bei welcher ein erster Verriegelungsbecken (52) und ein zweiter Verriegelungsbecken (53) an einem zweiten Vorforn eine Abdiverter des ersten und zweiten Verriegelungsbeckens (52, 53) zur Bildung der Pakkungs-Querverstellung (52, 53) aufweisen, wobei die Querverstellung abdivert, um eine Packung am Anzeigegestreifen (18) lösbar zu befestigen.
  5. Vorrichtung nach einem der vorangehenden Ansprüche, bei welcher der Streifenantriebsmotor (30) einen Schrittmotor (32) und ein Schrittschaltrelais (36) enthält und der Schrittmotor (32) das Schrittschaltrelais (36) so dreht, daß es den Trägestreifen (18) steuerbar zur Verriegelungsstation (50) fördert.
  6. Vorrichtung nach einem der vorangehenden Ansprüche, mit einer Einrichtung zum Trennen benachbarter Vorfornen längs der Querverriegelung zum Bilden der unteren und oberen Verriegelung von Verpackungen, die sich jeweils oberhalb und unterhalb der Verriegelungsstation erstrecken.
  7. Verfahren zum Herstellen einer Anzahl von geklärten, verriegelten Packungen, die an einem fortlaufenden Trägestreifen (18) abnehmbar befestigt sind, wobei das Verfahren die folgenden Schritte umfaßt:
    - Ausblenden einer Reihe von Packungsportmen, deren jede so geformt ist, daß sie ein Produkt aus einer Produktomatsquelle aufnimmt; und
    - bei jeder Vorforn in einer Verriegelungsstation (50) Ausblenden einer Querverriegelung über die Vorforn zur Bildung einer oberen Verriegelung einer geöffneten Packung,
    - die sich unterhalb der Verriegelungsstation (50) erstreckt, und einer unteren Verriegelung, die sich unterhalb der Verriegelungsstation (50) erstreckt, die sich oberhalb der Verriegelungsstation (50) erstreckt; gekennzeichneter durch folgende Schritte:
      - Auswählen des Trägestreifens aus einem silbergebenen Material;
      - Anordnen des fortlaufenden silbergebenen Trägestreifens (18) nahe den Packungsportmen; und
      - gleichzeitig mit dem Ausblenden der Querverriegelung abnehmbareres Befestigen des oberen Endes der geöffneten Packung am Trägestreifen (18) durch Bewegen des oberen Endes der geöffneten Packung gegen den Trägestreifen (18) und Bewegen des oberen Trägestreifens (18) gegen die obere Verriegelung der geöffneten Packung mit dem Trägestreifen (18).
  8. Verfahren nach Anspruch 7, bei welchem das Verriegeln der Vorfornen in der Verriegelungsstation (50) durch Verriegelungsbecken (52, 53) durchgeführt wird, die gleichzeitig ein Ende der geöffneten Packung am Trägestreifen (18) abnehmbar befestigen.
  9. Verfahren nach Anspruch 8, bei welchem ein Verriegelungsbecken (52) eine Öffnung enthält, durch die der Trägestreifen (18) hindurchgeht, der Trägestreifen (18) in seine Nutabschleifung und die Packungsform geführt wird und die Verriegelungsbecken (52, 53) abnehmbar befestigt wird.
  10. Verfahren nach Anspruch 9, bei welchem der Trägestreifen (18) durch die Öffnung in der



enen Versiegeleungsbereich (52) und zur Versiege-  
lungsfestigung (50) hin gekörntet wird, indem ein  
Schrittschaltnagel (36) einer Streifenverschiebung  
(30) mittels eines Schrittschloßes (32) der Strei-  
fenverschiebung (30) gekörntet wird.

#### Reverendications

1. Appareil pour la fabrication d'une pluralité d'emballages scellés (70) et un joint fixe de support à pouvoir être détaché, à une bande support de présentation (18), l'appareil comprenant :

un dispositif (12) de formation de sac pour former une préforme d'emballage, la préforme étant configurée pour recevoir un produit ;  
un poste de scelllement (50) disposé au voisinage dudit dispositif de formation de sac (12), le poste de scelllement (50) comprenant des mâchoires de scelllement (52, 53) pour former un joint transversal au travers de la préforme de manière à former un joint supérieur d'un sac ;  
un joint inférieur d'un sac (36) et un joint inférieur du poste de scelllement (50) et un joint inférieur d'un emballage à remplir s'étendant au-dessous du poste de scelllement (50) ;  
l'appareil étant caractérisé en ce qu'il comprend en outre :

un dispositif (30) d'entraînement de bande pour amener une bande (18) continue support de présentation pouvant être scellée en un emplacement adéquat au poste de scelllement (50) ; et  
au moins une barre de scelllement (62) de la bande support de présentation (18) s'étendant latéralement de chaque emballage à la bande (18) support de présentation annuellement au scelllement d'une extrémité de l'emballage par les mâchoires de scelllement (52, 53) ;  
grâce à quoi les emballages scellés remplis (70) sont fixés à la bande support de présentation (18) et peuvent être retirés de la bande sans endommager la condition d'étanchéité des emballages.

2. Appareil selon la revendication 1, dans lequel l'une desdites mâchoires de scelllement (52) comprend une partie fixe et une partie mobile, la partie mobile (52) passe à travers la bande support (18) pour accéder à l'extrémité de l'emballage qui doit être fixée à la bande support de présentation (18).

3. Appareil selon la revendication 2, dans lequel la partie est définie entre lactic au moins une barre (62) de scelllement de la bande et une partie (66) découpée de lactic une desdites mâchoires de scelllement (52).

4. Appareil selon l'une quelconque des revendications précédentes, dans lequel une première barre (62) de scelllement de bande est fixée à une première mâchoire de scelllement (52) et une seconde barre de scelllement de bande est fixée à une seconde mâchoire de scelllement (53), et dans lequel l'entraînement desdites première et seconde mâchoires de scelllement (52, 53) pour former la jonction transversale de l'emballage achève les première et seconde étapes de la méthode pour fixer de façon amovible un emballage à la bande support de présentation (18).

5. Appareil selon l'une quelconque des revendications précédentes, dans lequel le dispositif (30) d'entraînement de la bande comprend un moteur pas à pas (32) et une roue d'entraînement pas à pas (36), et le moteur pas à pas (32) fait tourner la roue d'entraînement pas à pas (36) pour faire avancer de façon contrôlée la bande (18) support de présentation en direction du poste de scelllement (50).

6. Appareil selon l'une quelconque des revendications précédentes comprenant en outre :

des moyens pour séparer les préformes adjacentes le long de la jonction transversale de manière à former les joints inférieurs et supérieur des emballages qui s'étendent respectivement au-dessus et au-dessous du poste de scelllement.

7. Procédé de fabrication d'une pluralité d'emballages scellés remplis qui sont fixés de façon amovible à une bande support continue (18), le procédé comprenant les étapes consistant à :

former une série de préformes d'emballage, dont chacune est configurée de façon à recevoir le produit à partir d'une source d'approvisionnement de produit ; et  
pour chaque préforme, former au niveau d'un poste de scelllement (50) un joint de scelllement transversal au travers de la préforme pour former un joint supérieur d'un emballage rempli, s'étendant en-dessous du poste de scelllement (50) et un joint inférieur d'un emballage à remplir s'étendant au-dessous du poste de scelllement (50), étant caractérisé en ce qu'il comprend en outre les étapes consistant à :

choisir lactic bande support en un matériau pouvant être scellé ;  
positionner lactic bande (18) support de matériau pouvant être scellé, continue, adjacente aux préformes d'emballage ; et  
simultanément à la formation de la jonction transversale, fixer de façon détachable le son-

met de l'emballage rempli à la bande support (18) en déplaçant le sommet de l'emballage rempli contre la bande support de présentation (18) et on réalise une jonction amovible au joint supérieur de l'emballage rempli avec la bande support (18).

8. Procédé selon la revendication 7, dans lequel le scellément des préformes au poste de scellément (52) est réalisé dans une machine de scellément (52, 53) au filant simultanément de façon qu'elle puisse être désactivée, une extrémité de l'emballage rempli à la bande support (18).

9. Procédé selon la revendication 8, dans lequel une machine de scellément (52) comprend une ouverture au travers de laquelle la bande support (18) peut passer, le procédé comprenant en outre le fait de faire passer la bande support (18) à proximité proche de la préforme d'emballage et à l'extrémité du bout défectueux la préforme d'emballage à la bande support au moyen des machines de scellément (52, 53).

10. Procédé selon la revendication 9, dans lequel la bande support de présentation (18) est avancée à travers l'ouverture dans l'une des machines de scellément (52) et en direction du poste de scellément (50), en faisant tourner une roue (36) d'avance pas à pas d'un dispositif d'entraînement (30) de la bande au moyen d'un moteur pas à pas (32) du dispositif (30) d'entraînement de la bande.

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FIG.1

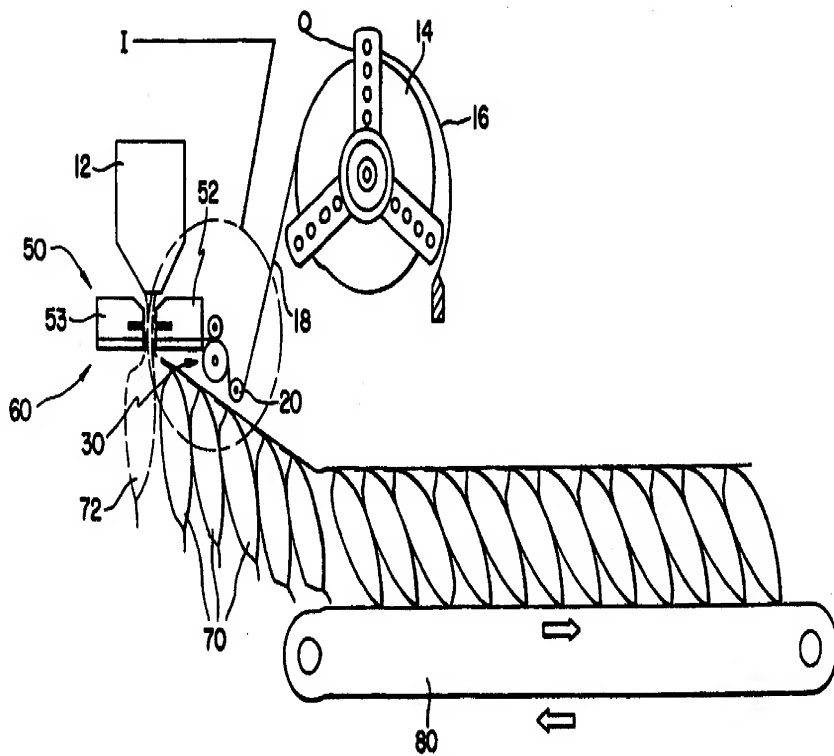


FIG.2A

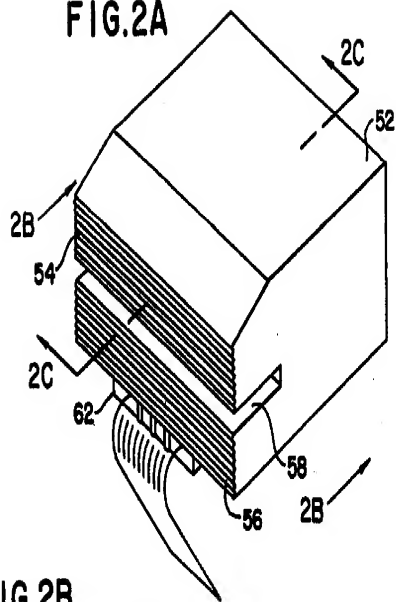


FIG.2B

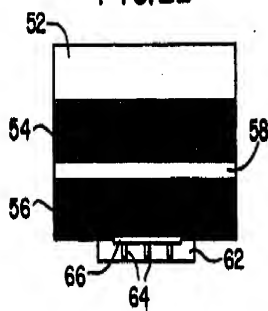


FIG.2C

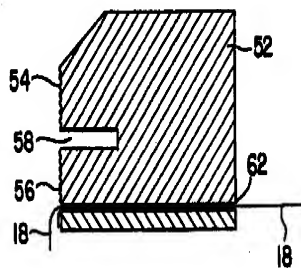


FIG.3A

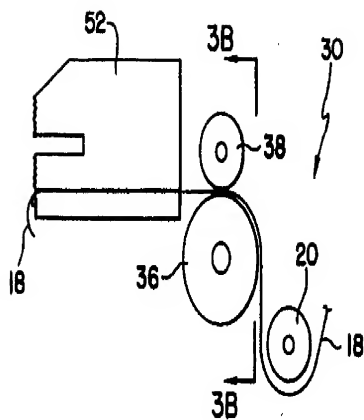


FIG.3B

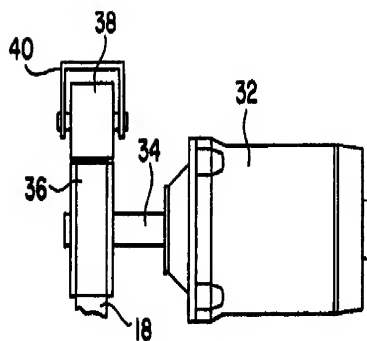


FIG. 4A

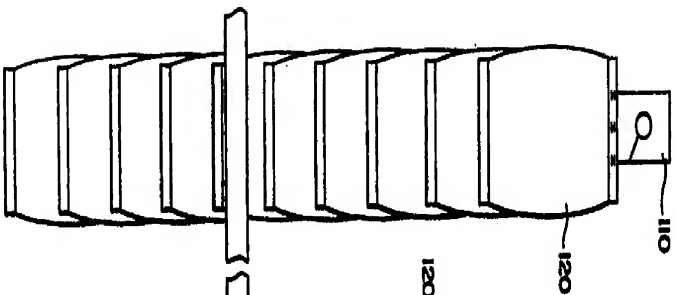


FIG. 4B

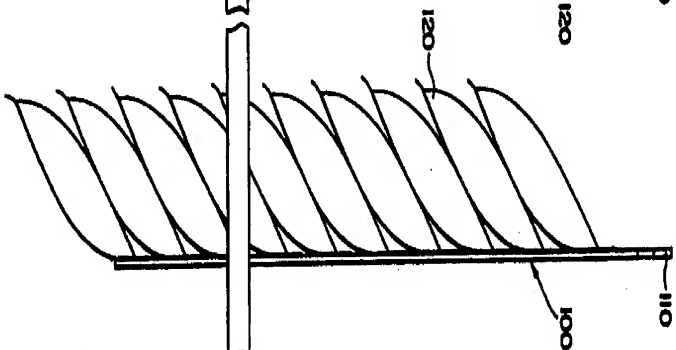


FIG. 4C

